Ecosystem Restoration

Increasing Levels of Success

AKA

Reducing Risk of Failure

Barton Rogers

New Orleans District

Identify issues for success

Blackwater Conservation Area

Issues for Success

1. Set realistic goals
2. Define success criteria
3. Identify vulnerable issues
4. Interdisciplinary expertise

Set Realistic Goals

The greater the change, the greater the risk

High energy systems, such as streams, will be more difficult to restore than low energy systems

Removal of the stressor may not restore ecosystem

Different goals than for flood damage reduction

Define Success Criteria

Criteria for success - different than for flood damage reduction

- Tree survival of 70% is success
- Levee failure of 1% not a success

Define success criteria

- % tree survival, acres of wetlands, acres of forested system of native species acres of permanent water features, etc.

Identify Vulnerable Issues

- Increase effort to address critical points (different than for flood damage reduction)
- Get the hydrology correct
  - Daily, weekly, seasonal water regime
- Water retention in soils
- Correct vegetative types for habitat
- Soil remediation (pH, organics, fertility)

Interdisciplinary Expertise

Environmental more involved in the design than for conventional COE projects.

Tap expertise of other agencies and elements, such as USFWS, NRCS, ERDC, etc.

Designers, constructors, and operators in early planning and design.

Blackwater Conservation Area

Section 206 of WRDA 1996

Initiation to Dedication 2 years 11 months

www.usace.army.mil/prj/cap/blackwater

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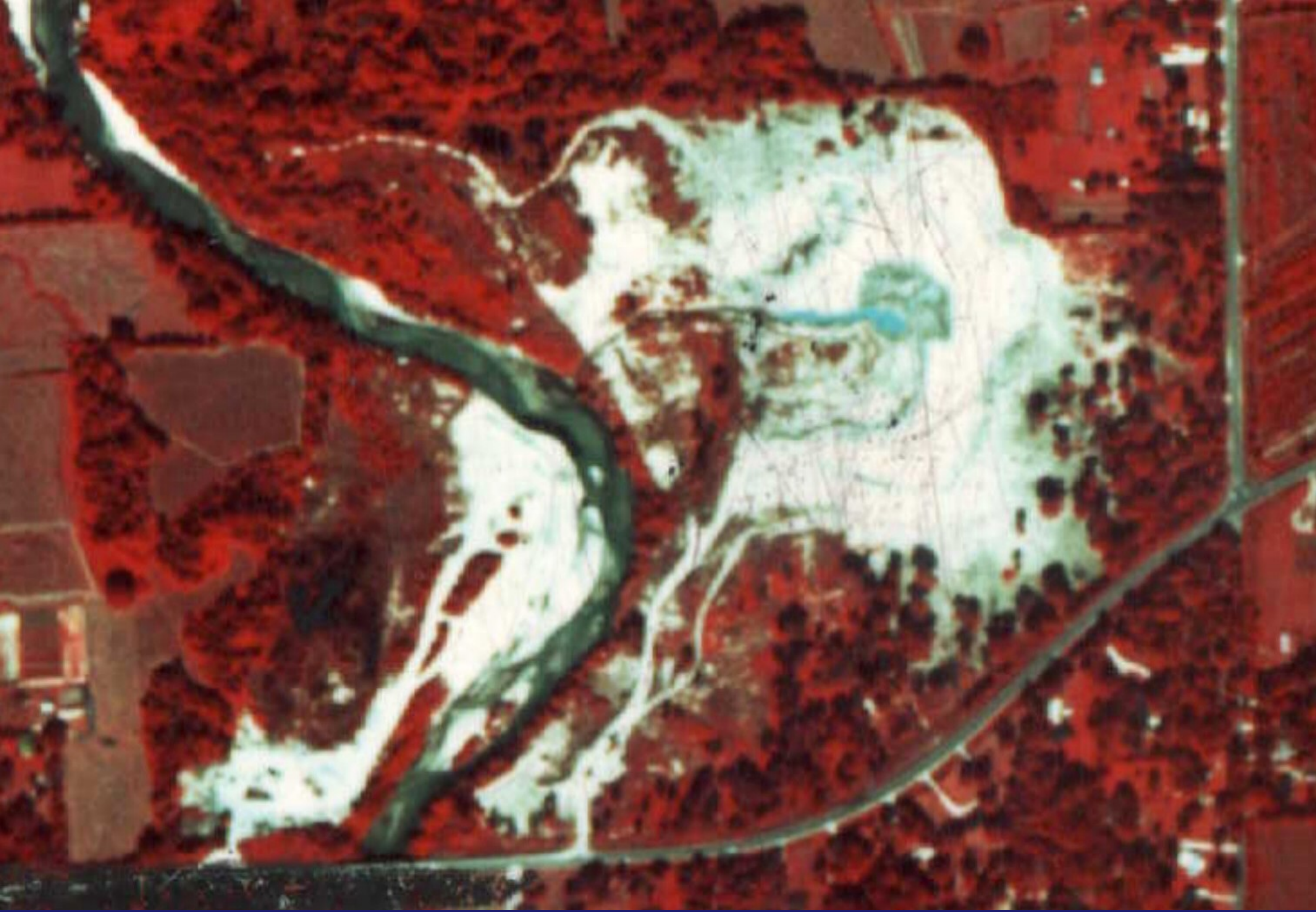

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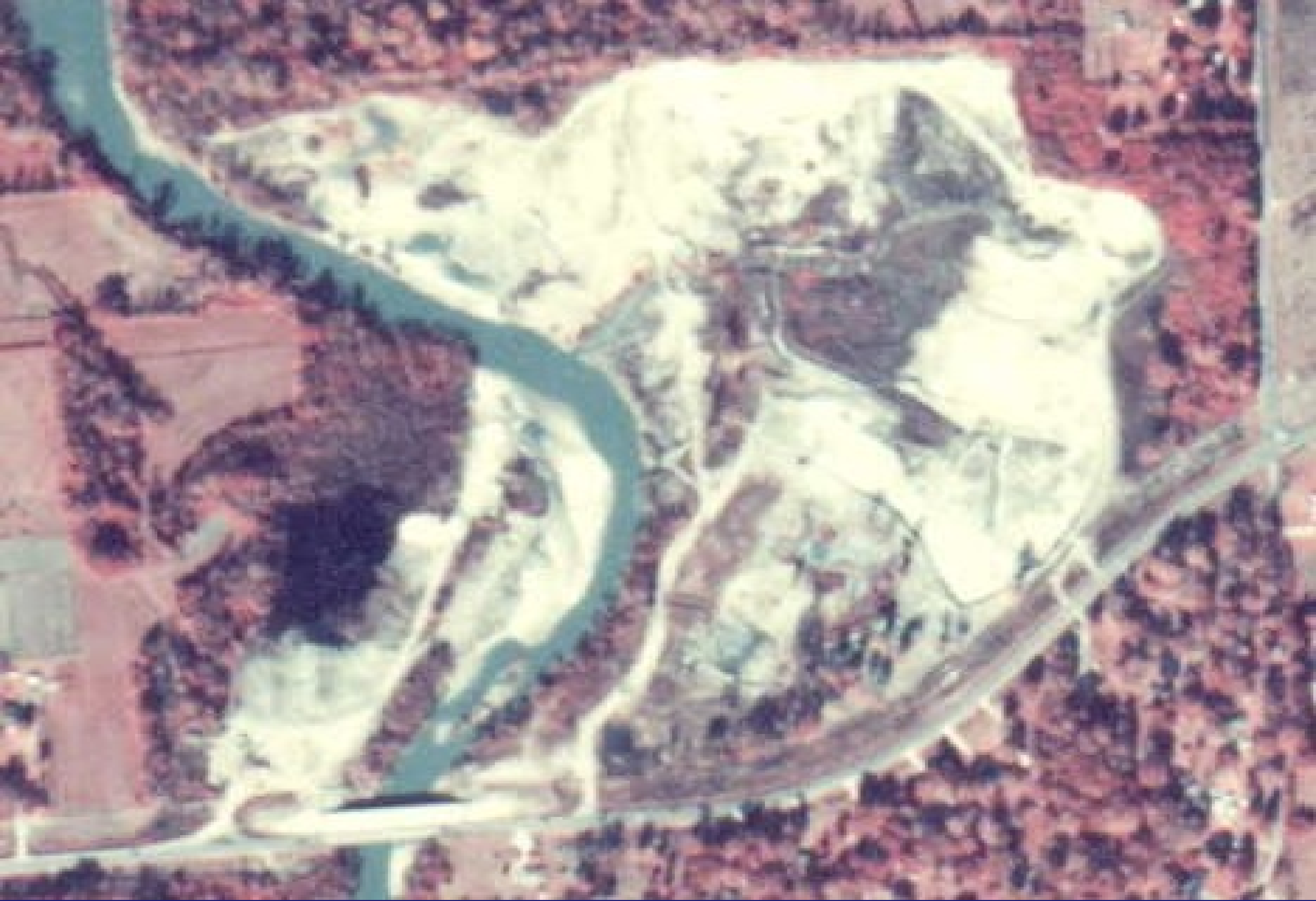

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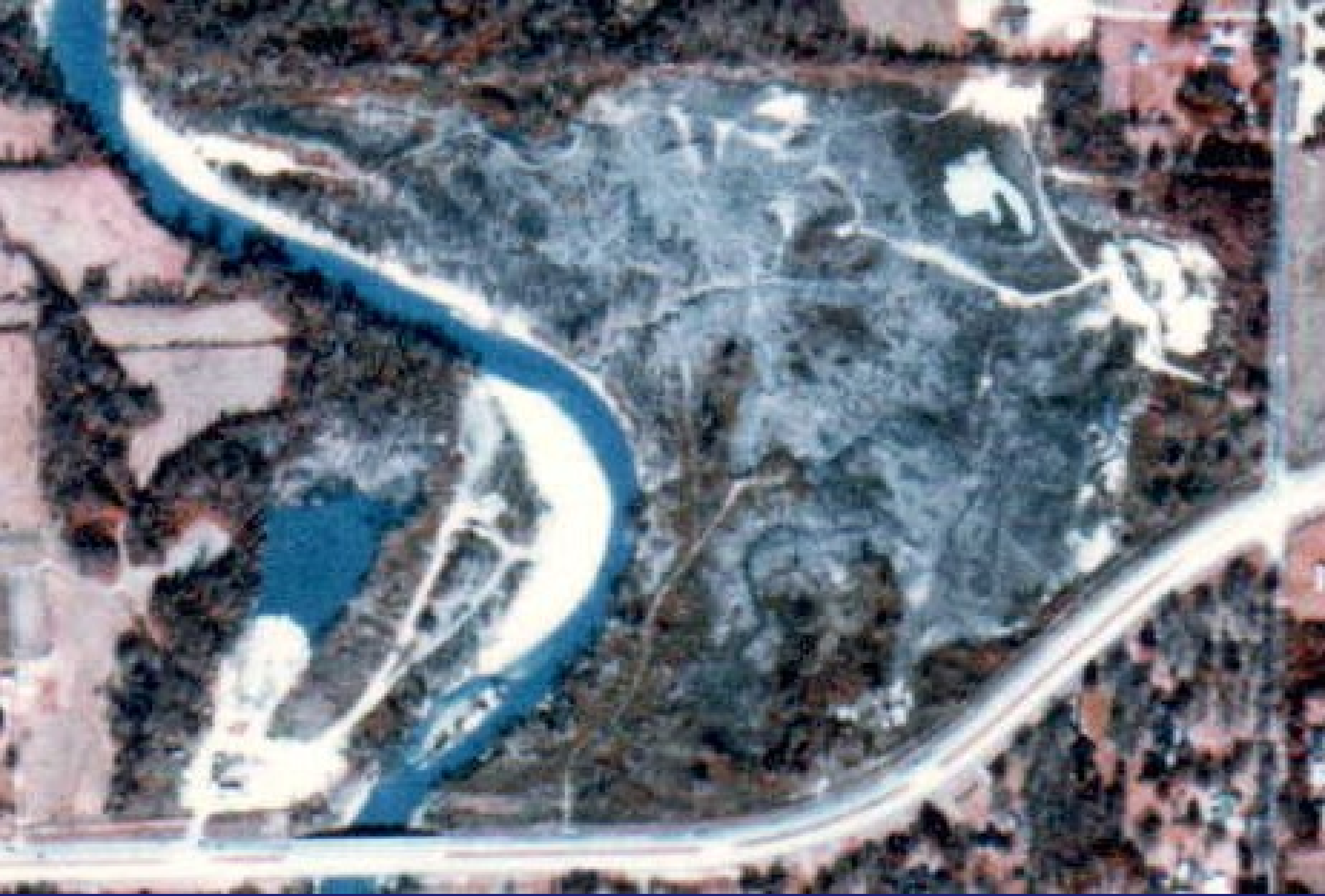

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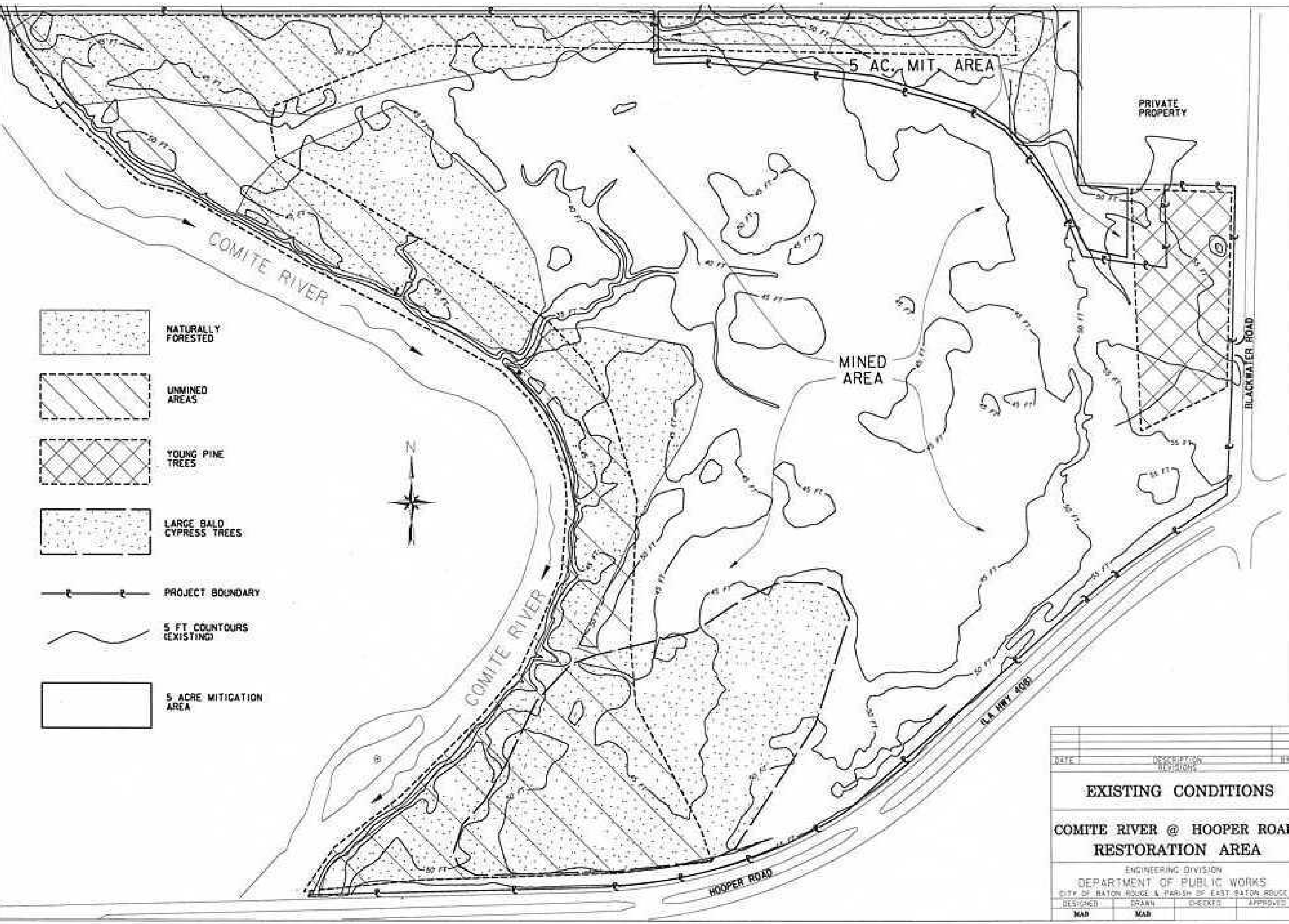

5 AC. MIT. AREA
PRIVATE PROPERTY
COMITE RIVER
MINED AREA
BLACKWATER ROAD
COMITE RIVER
(LA HWY 408)
HOOPER ROAD
N
NATURALLY FORESTED
UNMINED AREAS
YOUNG PINE TREES
LARGE BALD CYPRESS TREES
PROJECT BOUNDARY
5 FT COUNTOURS (EXISTING)
5 ACRE MITIGATION AREA
40 FT
45 FT
50 FT
55 FT

DATE	DESCRIPTION REVISIONS

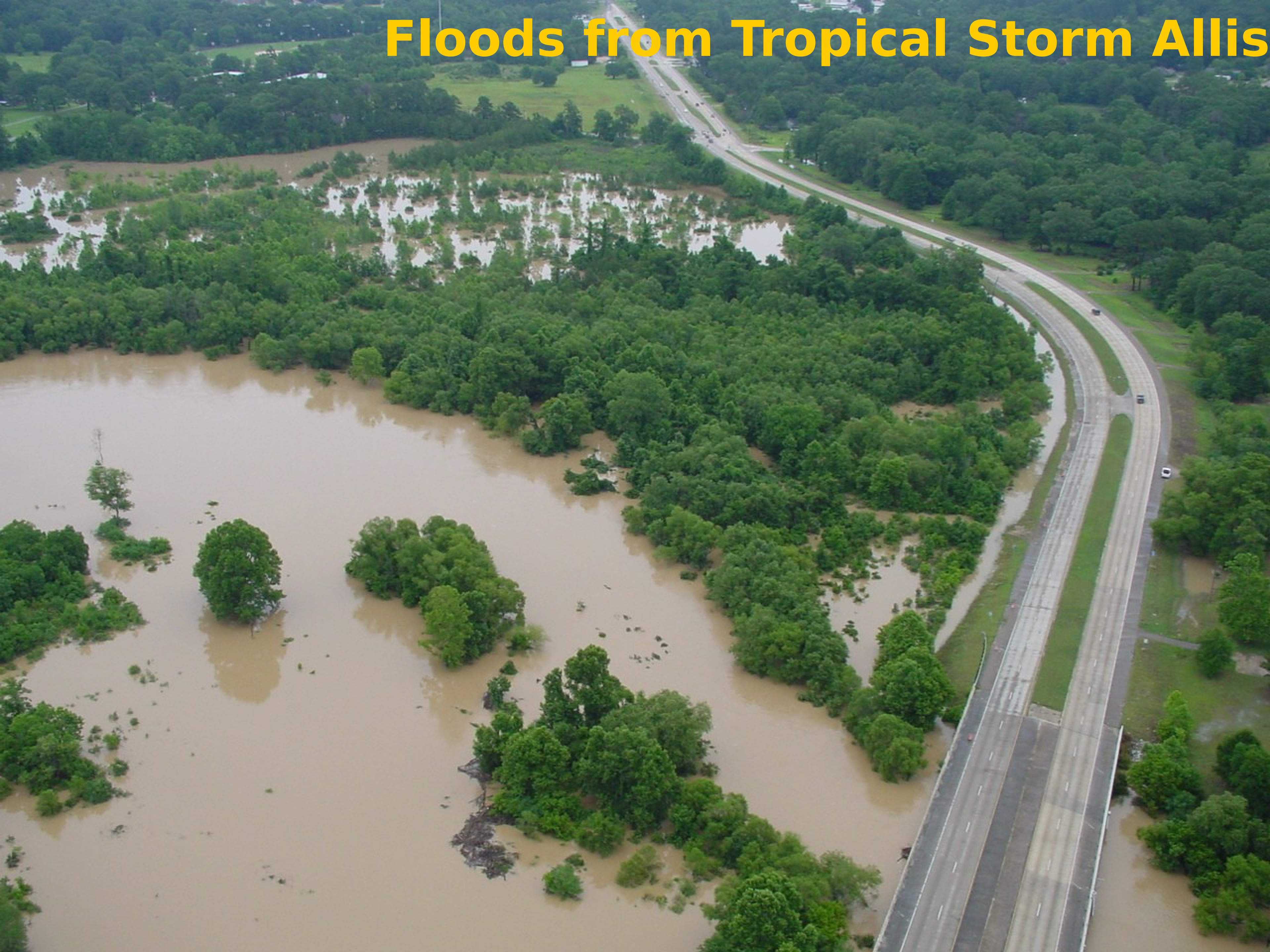
EXISTING CONDITIONS

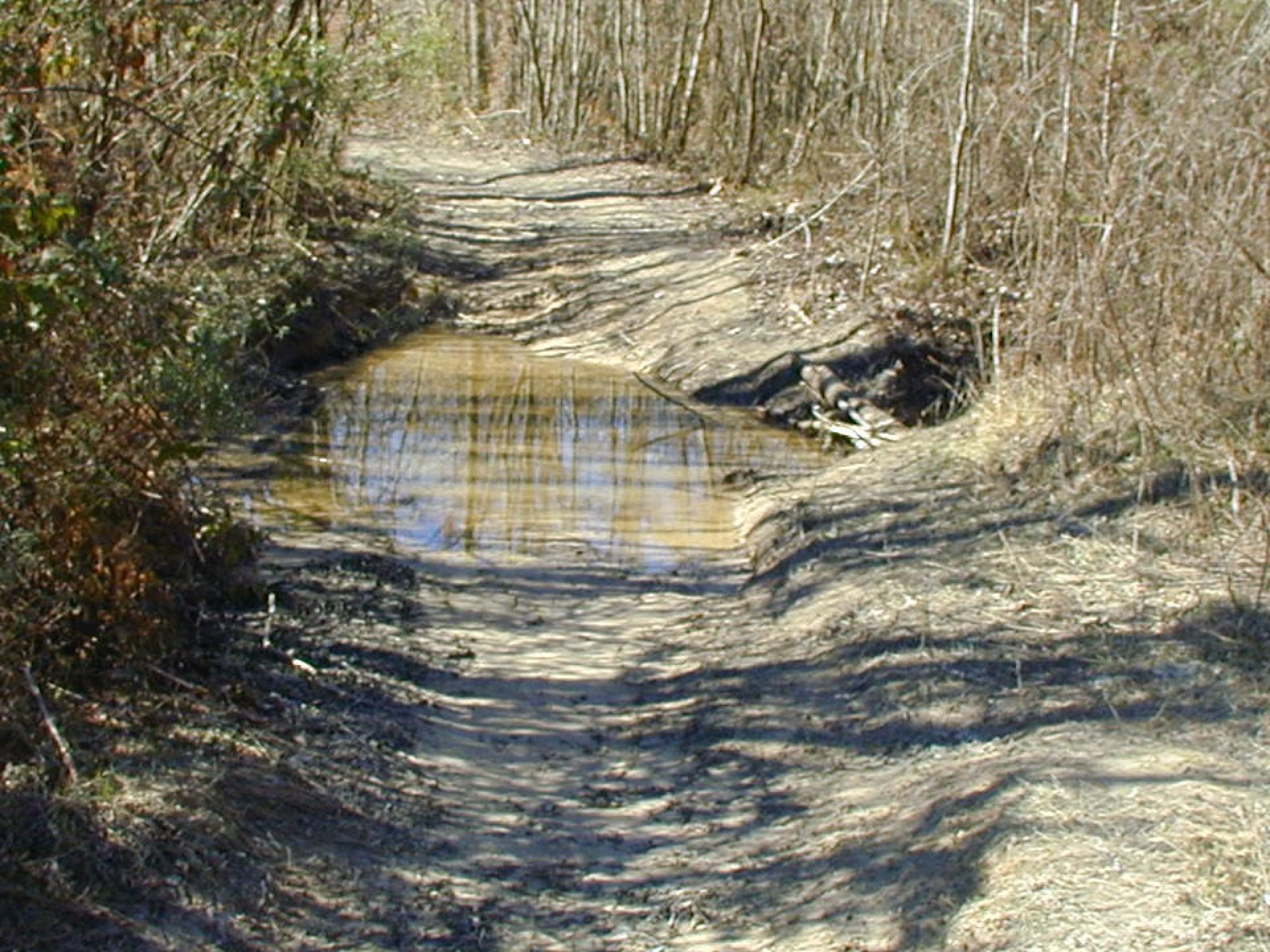
COMITE RIVER @ HOOPER ROA
RESTORATION AREA

ENGINEERING DIVISION
DEPARTMENT OF PUBLIC WORKS
CITY OF BATON ROUGE & PARISH OF EAST BATON ROUGE

DESIGNED	DRAWN	CHECKED	APPROVED
MAB	MAB		

Floods from Tropical Storm Allis





Site Conditions

Slow forest regeneration

Low fertility

Acidic soils pH - 5.4

Exotic Chinese tallow trees

<0.1 of an acre of permanent water

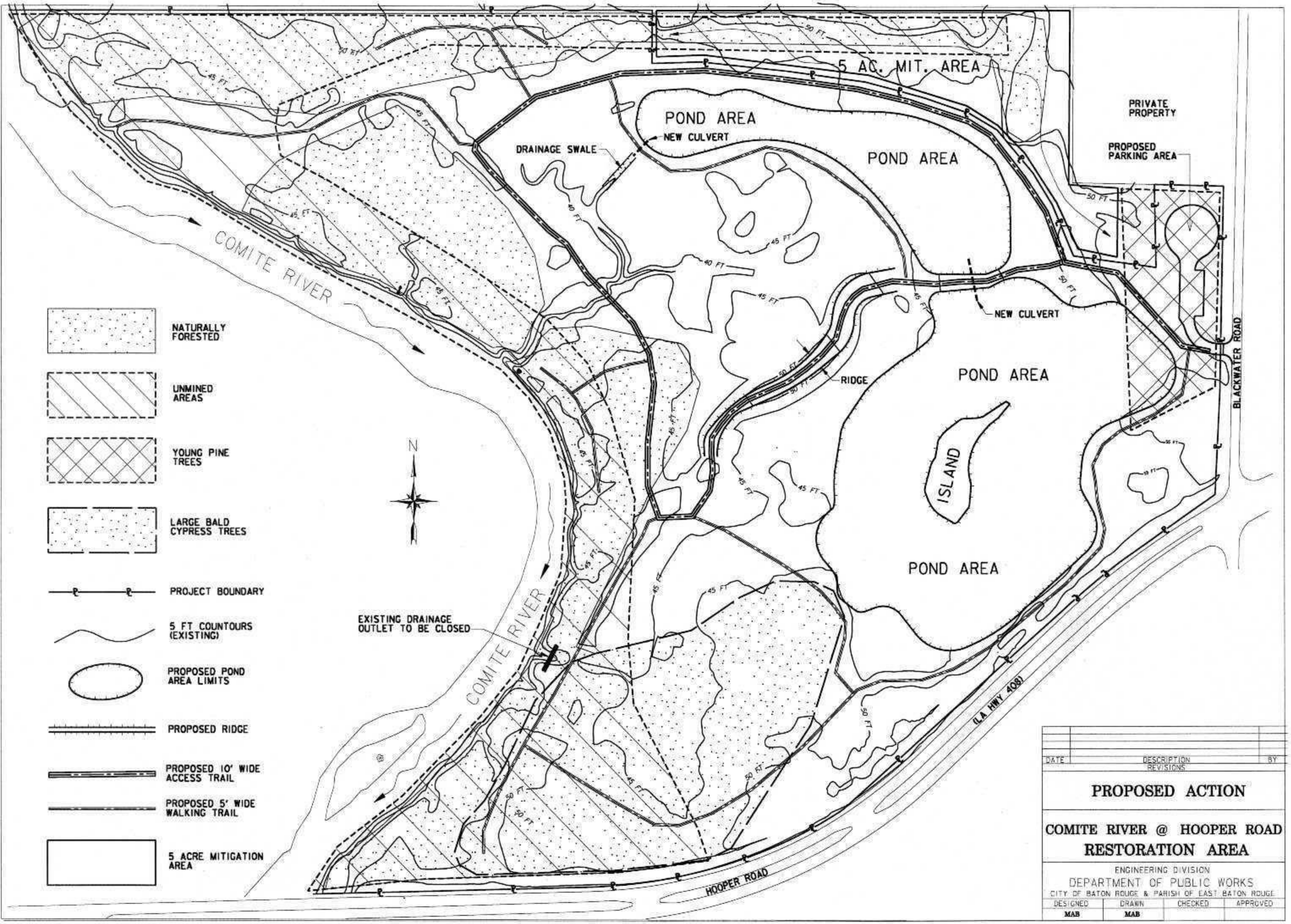
General Objectives

- to restore to a naturally productive aquatic, bottomland hardwood, freshwater swamp, and riparian ecosystem.

Success Criteria

-to create 9-10 acres of permanent water features and establish natural forest assemblage in the remaining degraded areas.

-Create 10.4 AAHUs of forested wetlands of native species


5 AC. MIT. AREA
PRIVATE PROPERTY
PROPOSED PARKING AREA
POND AREA
NEW CULVERT
DRAINAGE SWALE
POND AREA
40 FT
45 FT
50 FT
COMITE RIVER
NEW CULVERT
RIDGE
POND AREA
ISLAND
POND AREA
BLACKWATER ROAD
N
EXISTING DRAINAGE OUTLET TO BE CLOSED
COMITE RIVER
(LA HWY 408)
HOOPER ROAD
NATURALLY FORESTED
UNMINED AREAS
YOUNG PINE TREES
LARGE BALD CYPRESS TREES
PROJECT BOUNDARY
5 FT COUNTOURS (EXISTING)
PROPOSED POND AREA LIMITS
PROPOSED RIDGE
PROPOSED 10' WIDE ACCESS TRAIL
PROPOSED 5' WIDE WALKING TRAIL
5 ACRE MITIGATION AREA

DATE	DESCRIPTION	BY
	REVISIONS	

PROPOSED ACTION

COMITE RIVER @ HOOPER ROAD
RESTORATION AREA

ENGINEERING DIVISION
DEPARTMENT OF PUBLIC WORKS
CITY OF BATON ROUGE & PARISH OF EAST BATON ROUGE

DESIGNED	DRAWN	CHECKED	APPROVED
MAB	MAB		

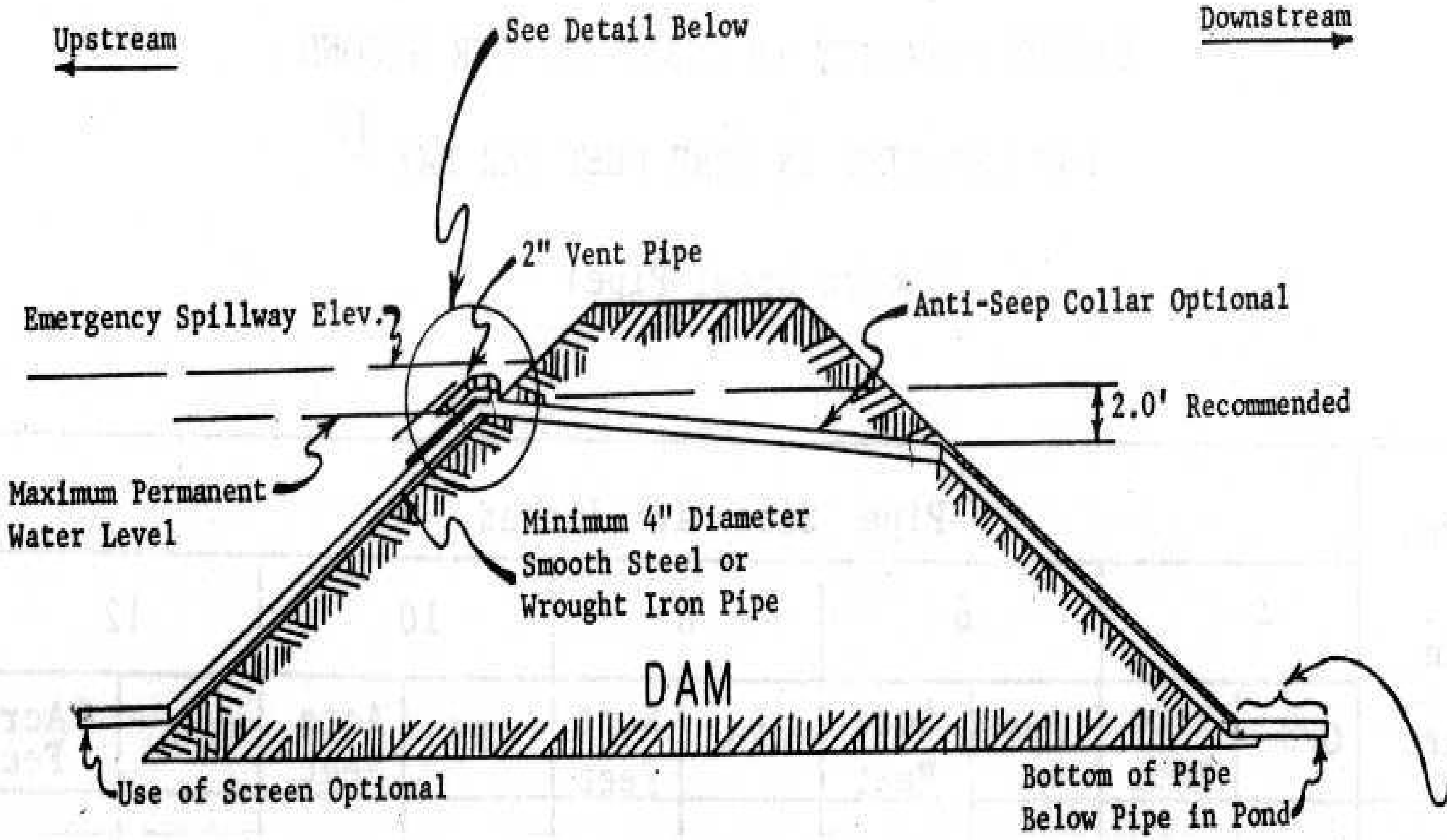
Design Specifics

- Creation of Lakes - 60,000 cu yds
    - Slopes vary from 3:1 to 20:1
    - Safety shelf and fish spawning habitat
- Soil Remediation (NRCS)
    - 2 tons of dolomitic lime/acre
        - Incl. lake bottoms
    - 10 tons of mulch/acre
    - 1,000 lbs of 13-13-13 fertilizer

NRCS Design

S-6-53

KLE TUBE FOR FARM PONDS


Upstream
See Detail Below
Downstream
2" Vent Pipe
Emergency Spillway Elev.
Anti-Seep Collar Optional
2.0' Recommended
Maximum Permanent Water Level
Minimum 4" Diameter Smooth Steel or Wrought Iron Pipe
DAM
Use of Screen Optional
Bottom of Pipe Below Pipe in Pond

Ground cover would be planted immediately after construction

Depending on time of year, would consist of a combination of bermuda grass, brown top millet, cereal rye, or ryegrass (NRCS)

Tree Planting Scheme

(LDWF)

1. Pine (loblolly, spruce) waxmyrtle
2. Baldcypress, tupelogum
3. Cherrybark oak, native sweet pecan
4. Blackgum, willow
5. Riverbirch, cottonwood
6. Red mulberry, common persimmon
7. Water oak, cow oak

Environmental Benefits

9-10 acres of aquatic habitat

10.4 AAHUs of forested wetlands

1 mile of riparian habitat

35 acres of restored bottomland hardwood

Wildlife corridor link

Improved habitat for many F&W species

Recreational Features

62.5 acre nature-based area

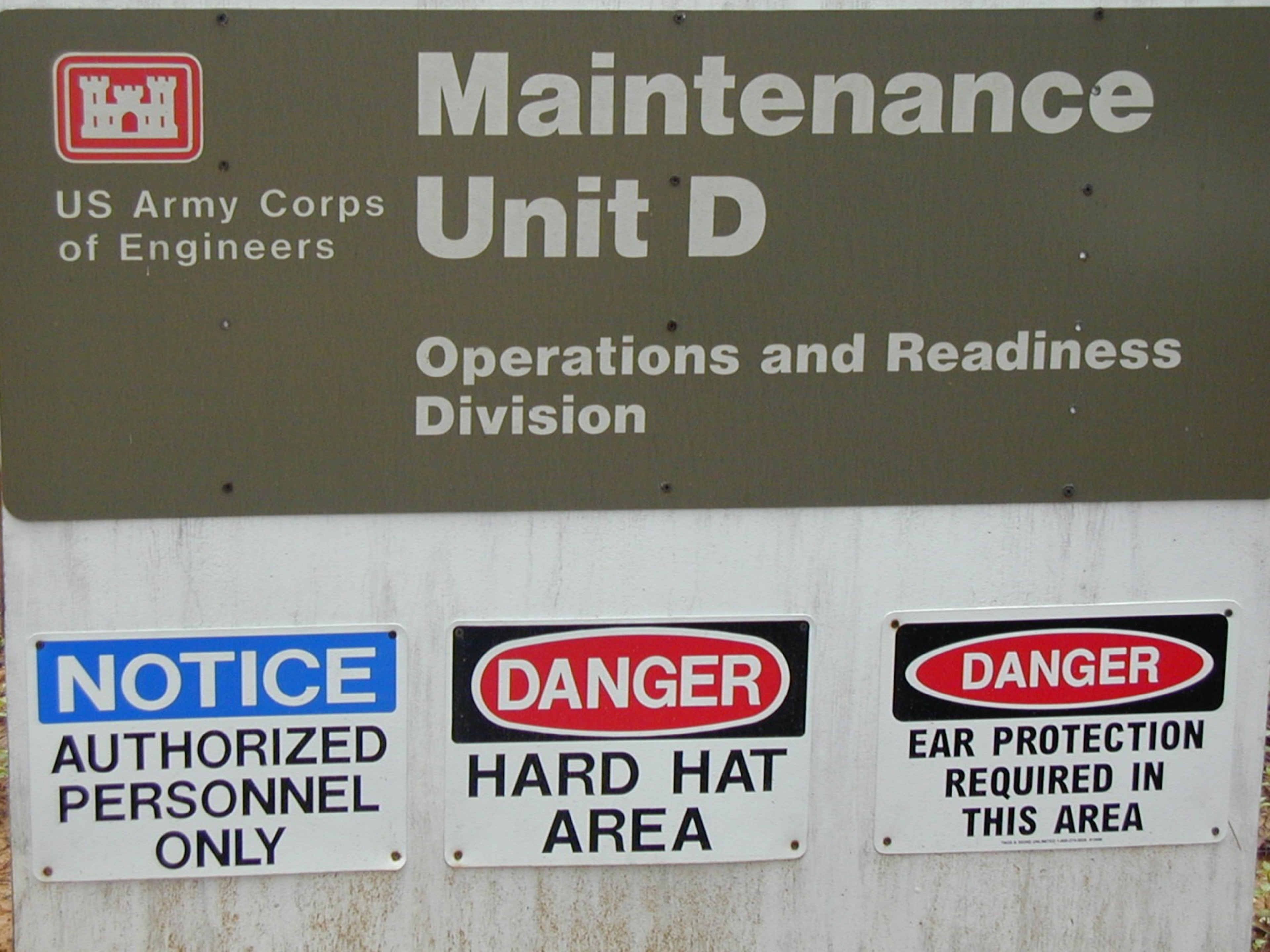
Over 1.8 miles of improved walkways

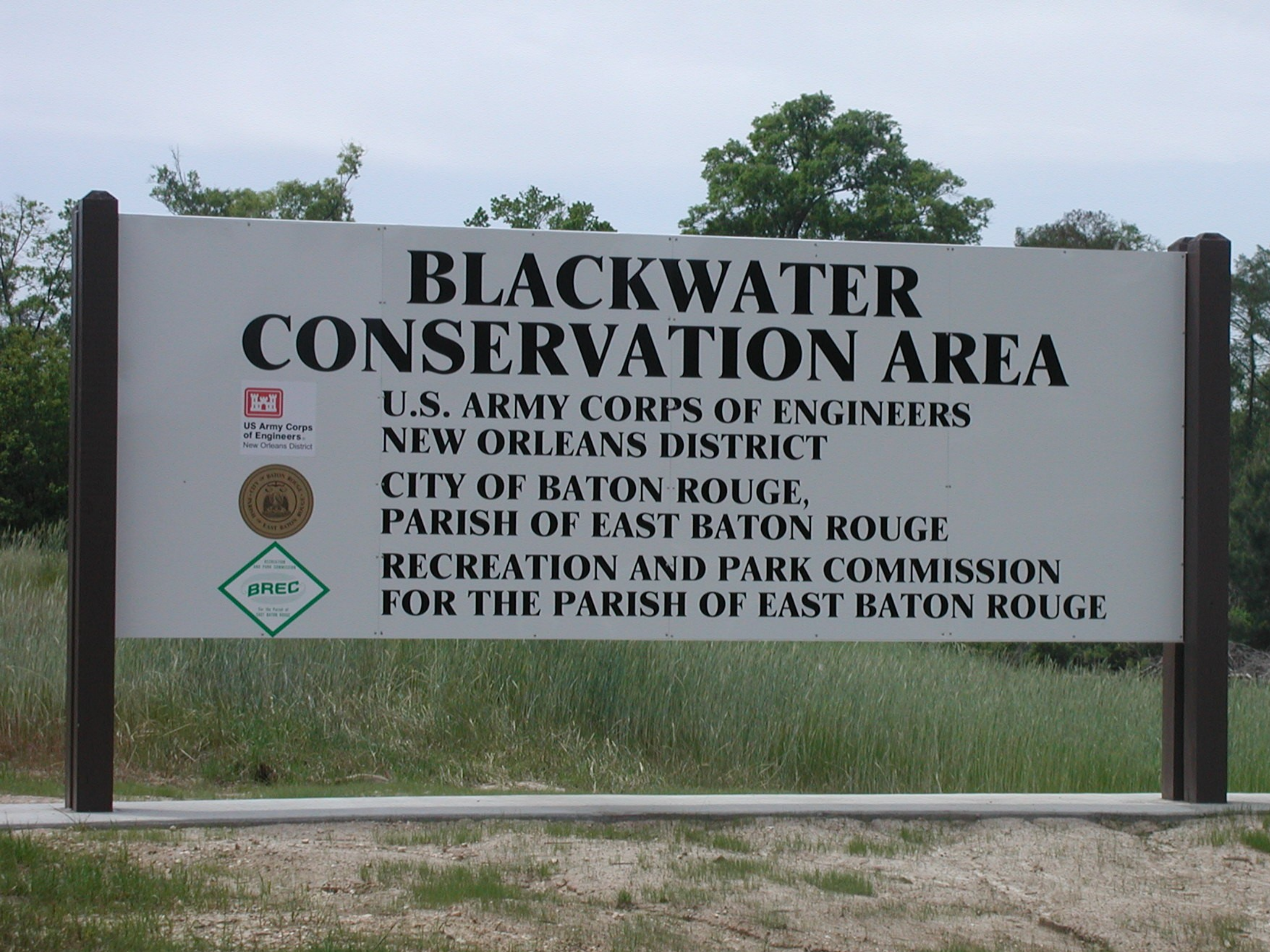
Two fishing lakes with 2-acre island

Public access to Comite River

Parking (cars and buses)

Restrooms


US Army Corps of Engineers
Maintenance Unit D
Operations and Readiness Division
NOTICE
AUTHORIZED PERSONNEL ONLY
DANGER
HARD HAT AREA
DANGER
EAR PROTECTION REQUIRED IN THIS AREA



BLACKWATER CONSERVATION AREA

US Army Corps of Engineers®
New Orleans District

U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT

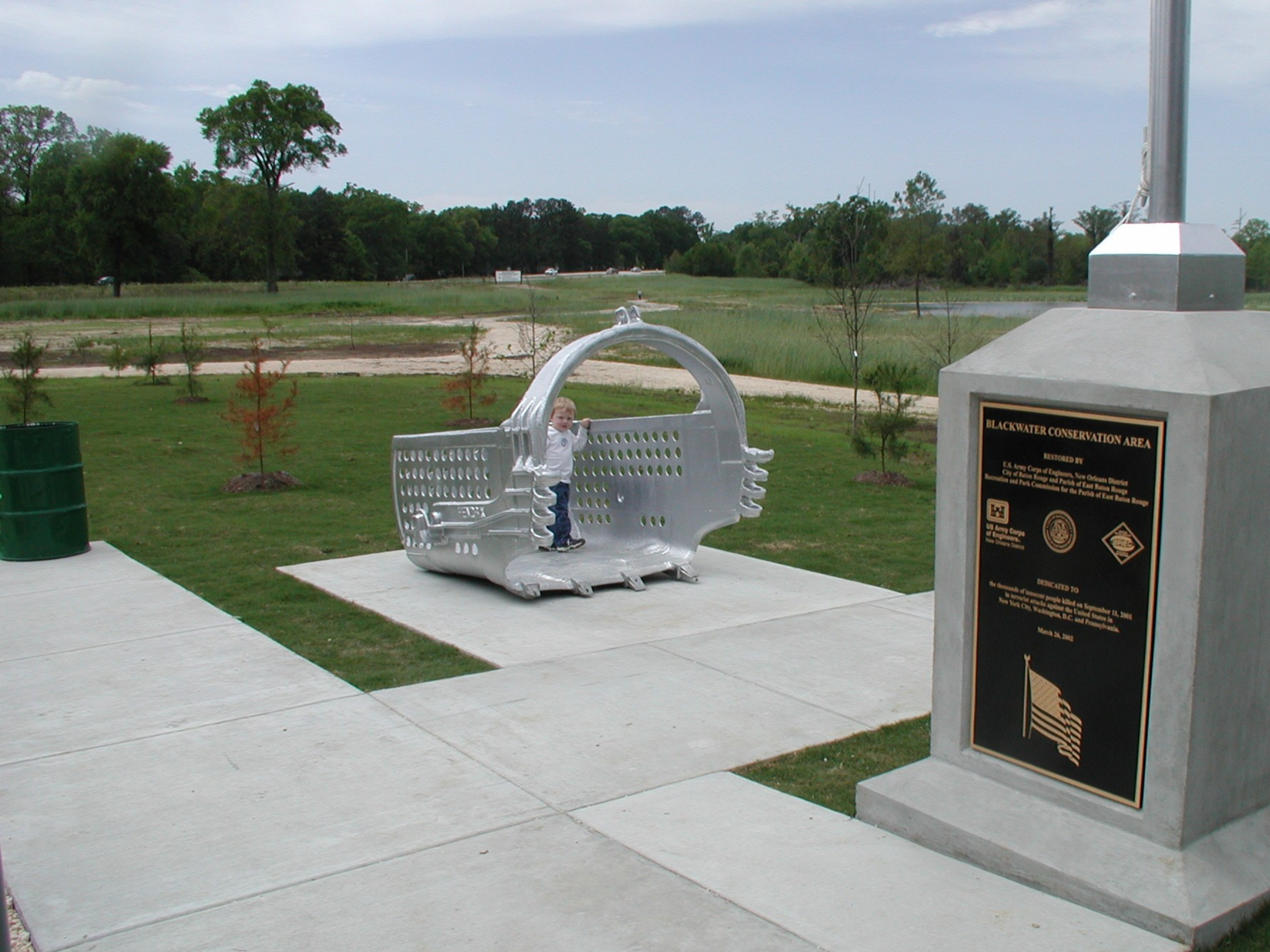
CITY OF BATON ROUGE,
PARISH OF EAST BATON ROUGE

BREC

RECREATION AND PARK COMMISSION
FOR THE PARISH OF EAST BATON ROUGE

SONY

Dedication March 26, 2002


BLACKWATER CONSERVATION AREA
RESTORED BY
U.S. Army Corps of Engineers, New Orleans District
City of Baton Rouge and Parish of East Baton Rouge
Recreation and Park Commission for the Parish of East Baton Rouge
US Army Corps of Engineers
New Orleans District
DEDICATED TO
the thousands of innocent people killed on September 11, 2001
in terrorist attacks against the United States in
New York City, Washington, D.C. and Pennsylvania.
March 26, 2002
HENDRIX

BLACKWATER
CONSERVATION AREA

Issues for Success

1. Set realistic goals
   - Creation of lakes with reservoir of clay
   - Bottomland hardwood/Freshwater Swamp
     - Normally have 60 inches of rain
     - Riverine, but low energy
   - Soil types
   - Tree assemblages with soil types

Issues for Success

2. Define criteria by which success is measured

   10.4 AAHUs of forested wetlands

      native BLH and freshwater swamp species

   9-10 acres of permanent water features

   Recreation opportunities

Issues for Success

3. Identify vulnerable issues
    - Sand/Silt areas –
        - boring plans, NRCS, ASCS
        - Capped areas with 2 +feet of clay
        - Unit D - Construction Crew - Lake Bottom
    - Planting scheme –
        - native plants from local stock
        - contractor with planting specifications

Issues for Success

4. Interdisciplinary Expertise

CORPS – PM, ENG, GEO, ENV, UNIT D in design

NRCS – Soils, lake bottom, borings

LDWF – Planting, Fish stocking

BREC – Recreation feature design and construction, plantings, restoration design

DPW - Surveys, Design, and Construction

Success, so far?

- ? 10.4 AAHUs of forested wetlands
  - Not at end of growing season
- ✓ Permanent water features
  - Lakes (12 acres) held water during 35 days of drought with only 2 inches of water level loss, mostly due to evaporation
- ✓ Recreation opportunities
  - High use by public

Issues for Success

Team effort, Corps, Sponsors, and Partners

Cost-effective geologic boring strategy

Developed earthwork with borings data

Soil remediation and lake plan with NRCS

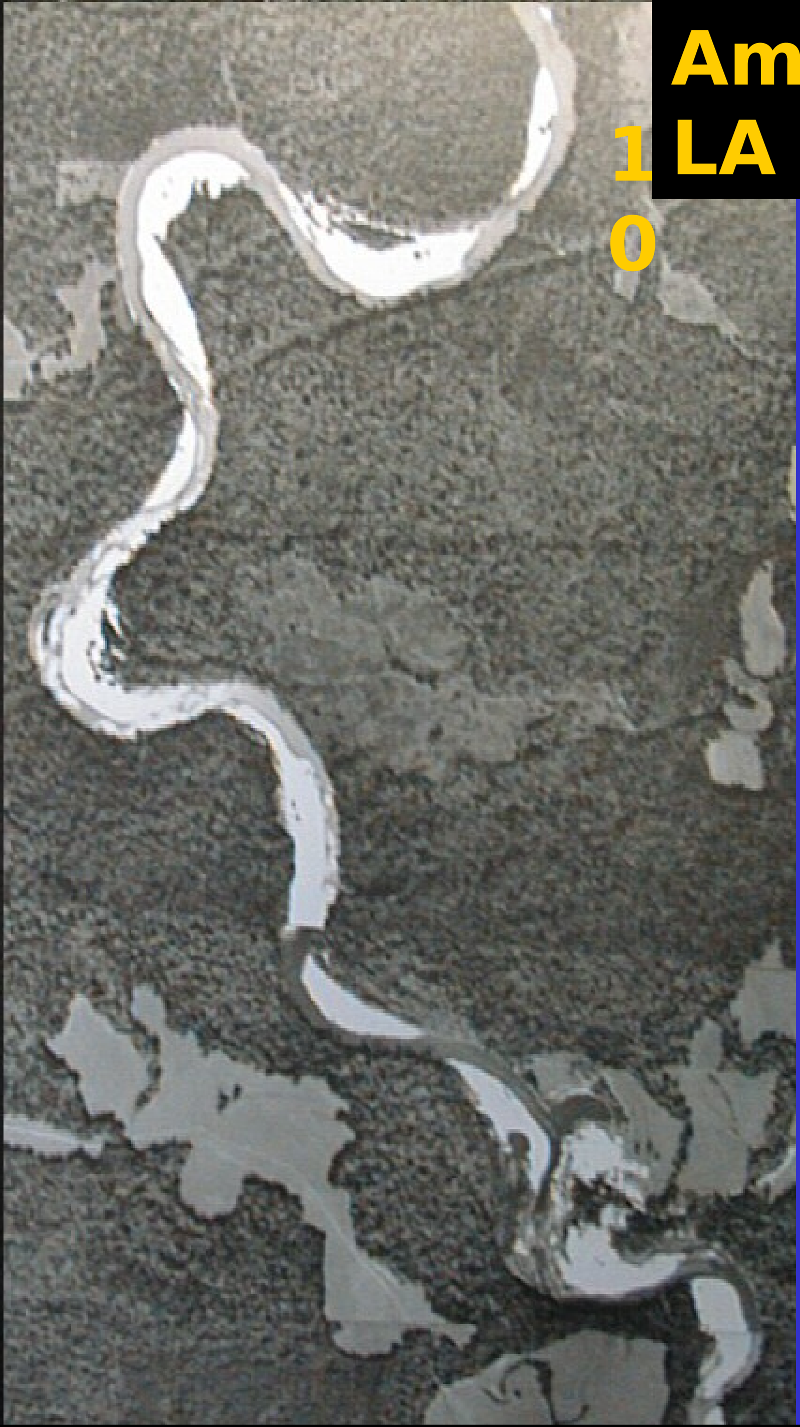
Existing NRCS designs for lake drains

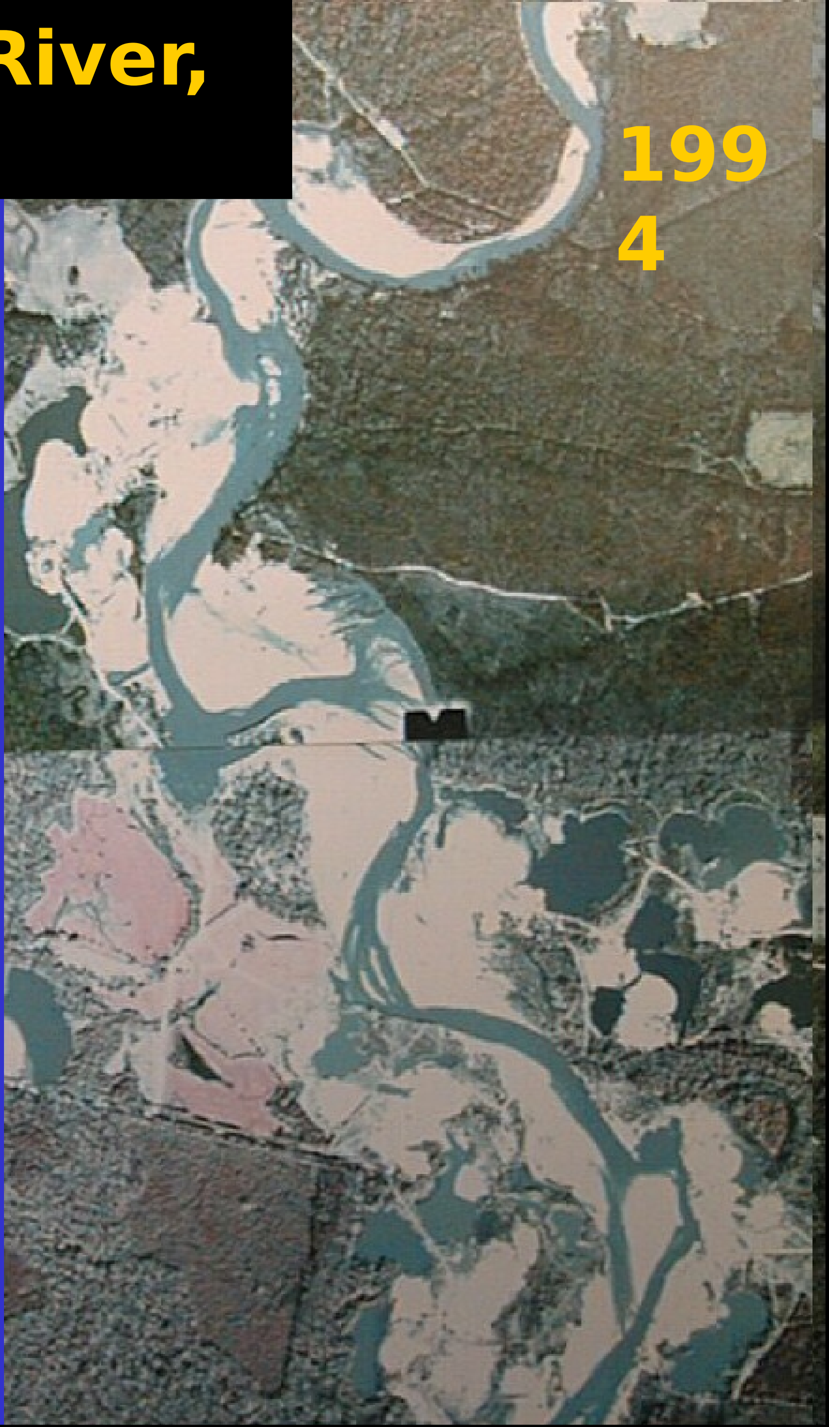
In-house construction crew involved in design

Larger project in high-energy systems?

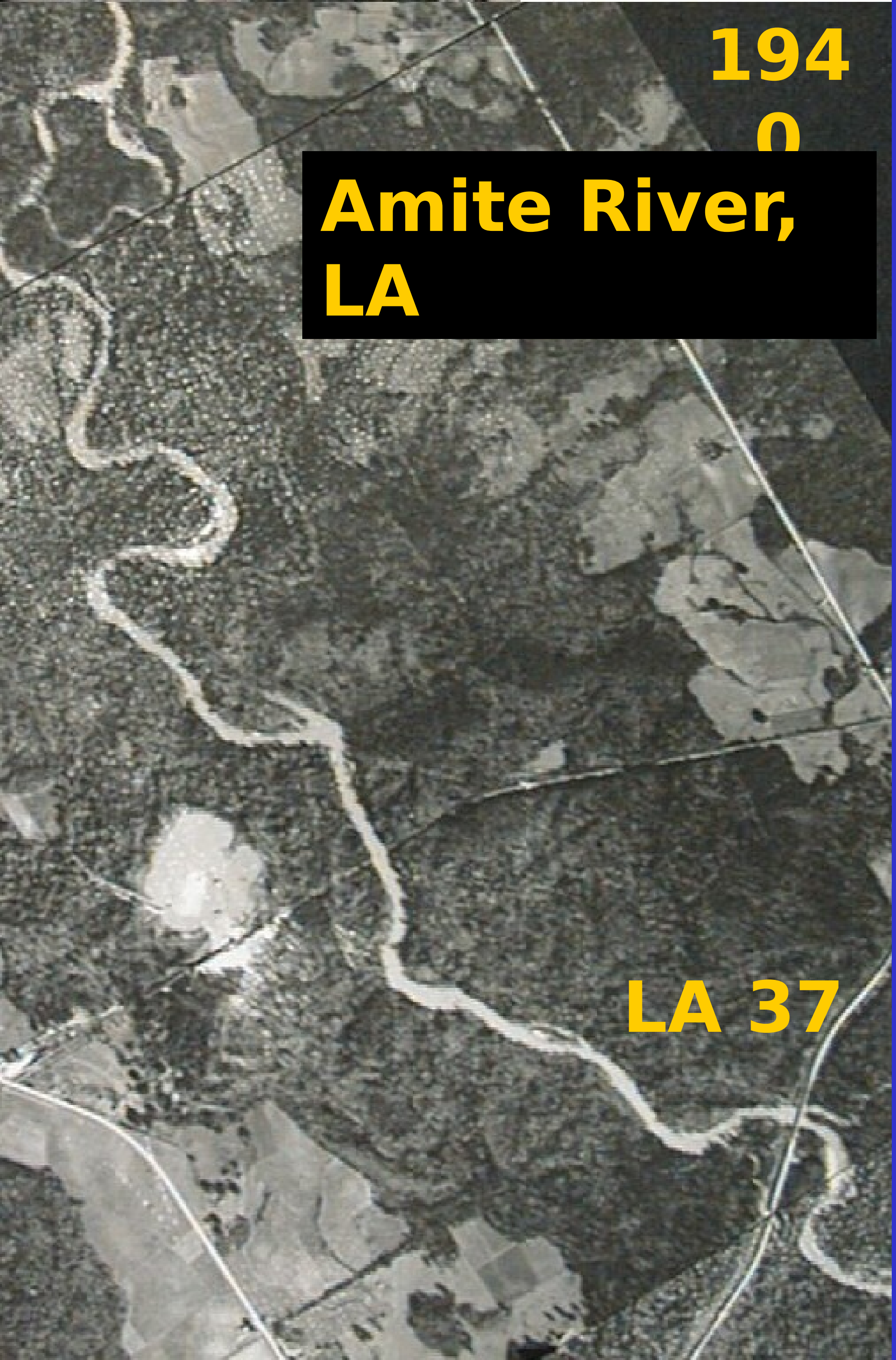
Different Story…

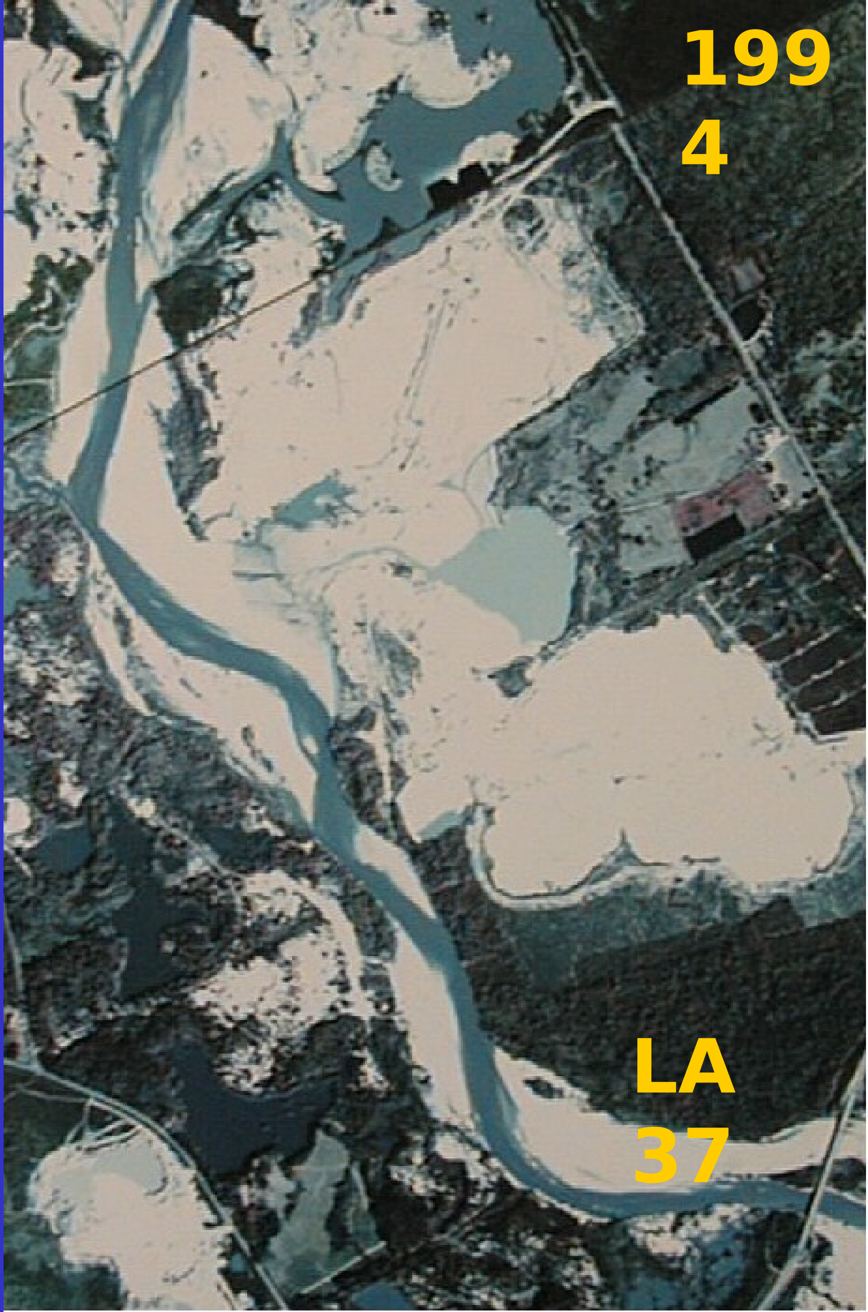
Amite River, LA





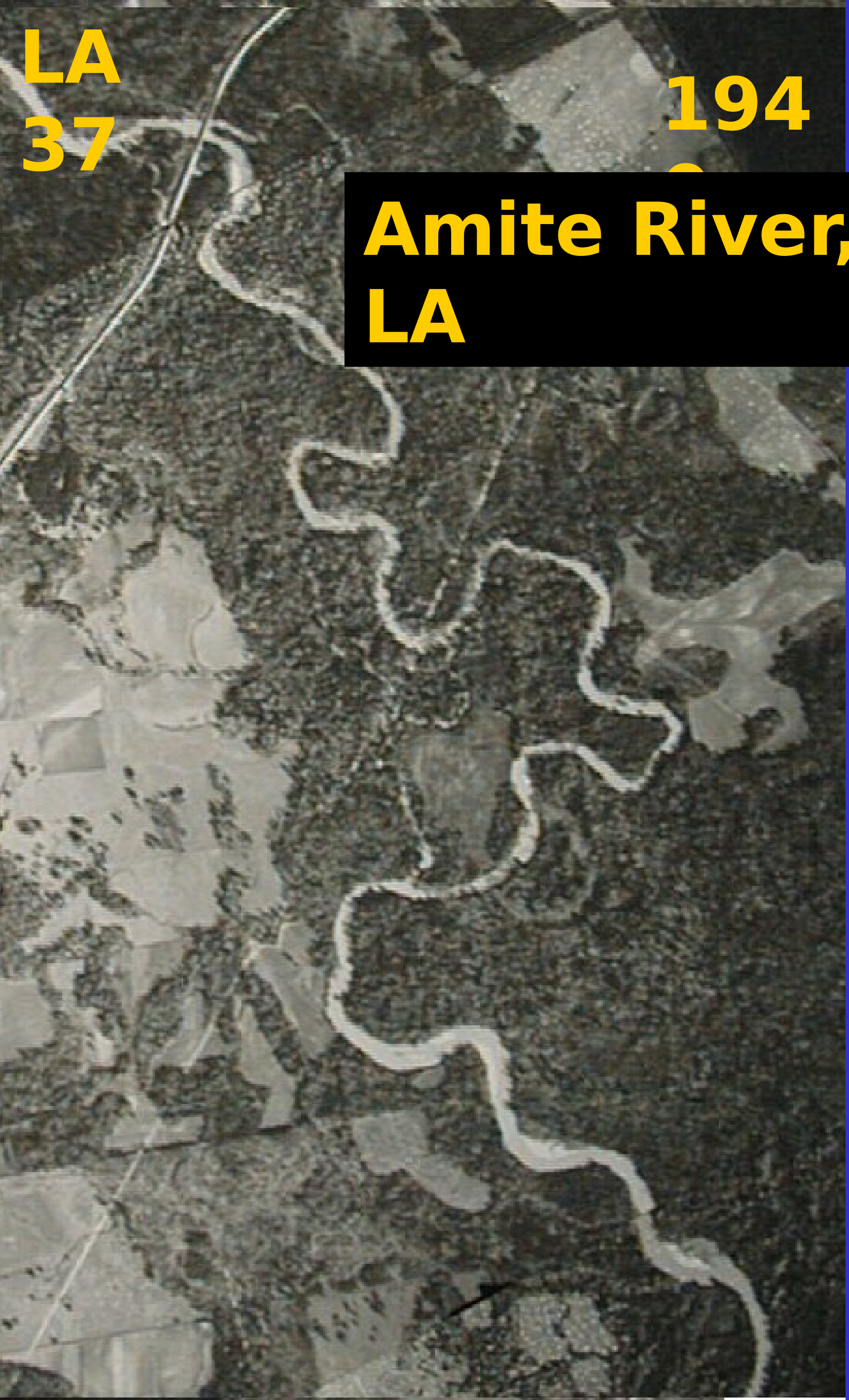
Amite River, LA

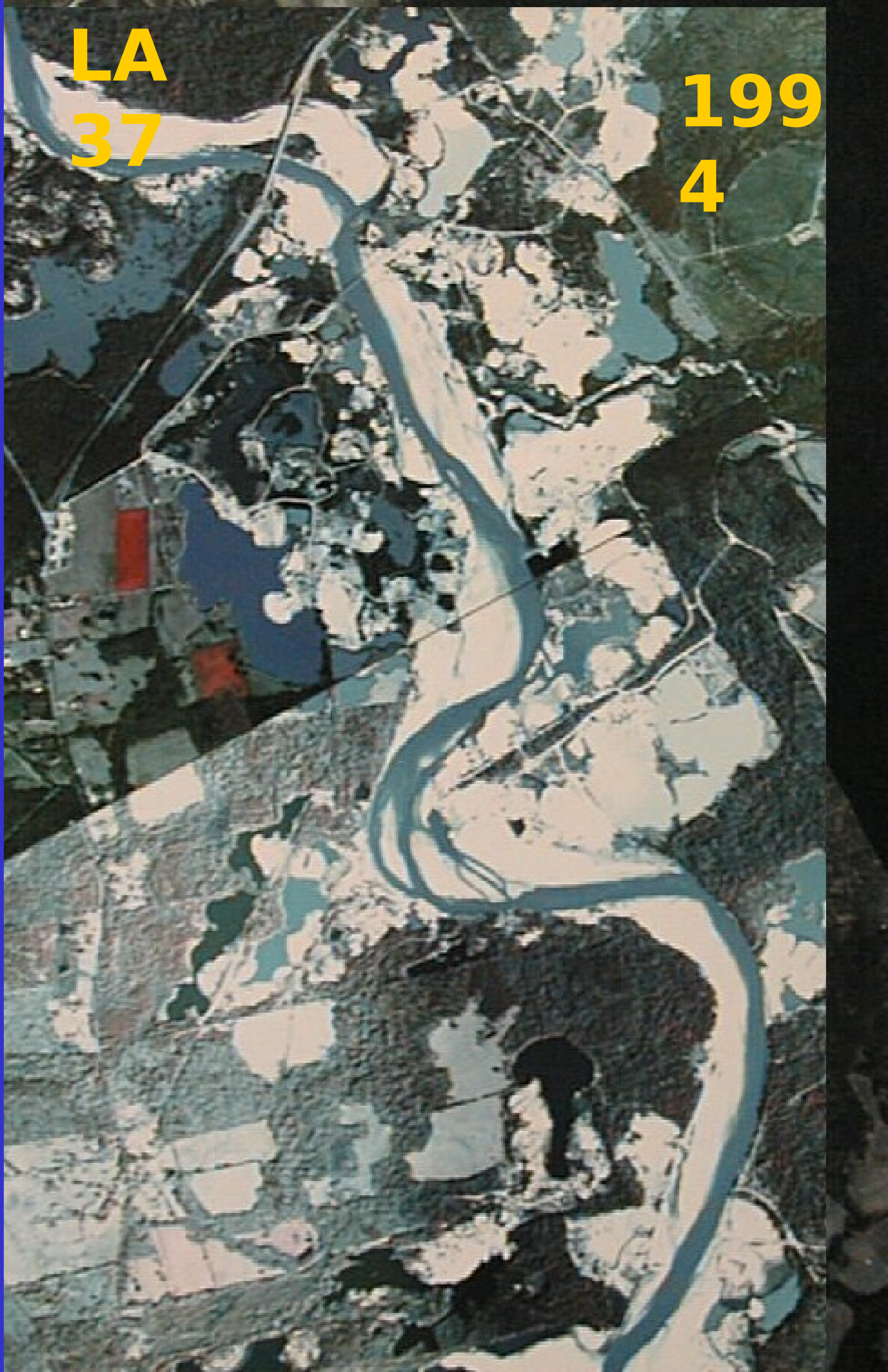




GRANGEVILLE

Amite River, LA





Amite River, LA

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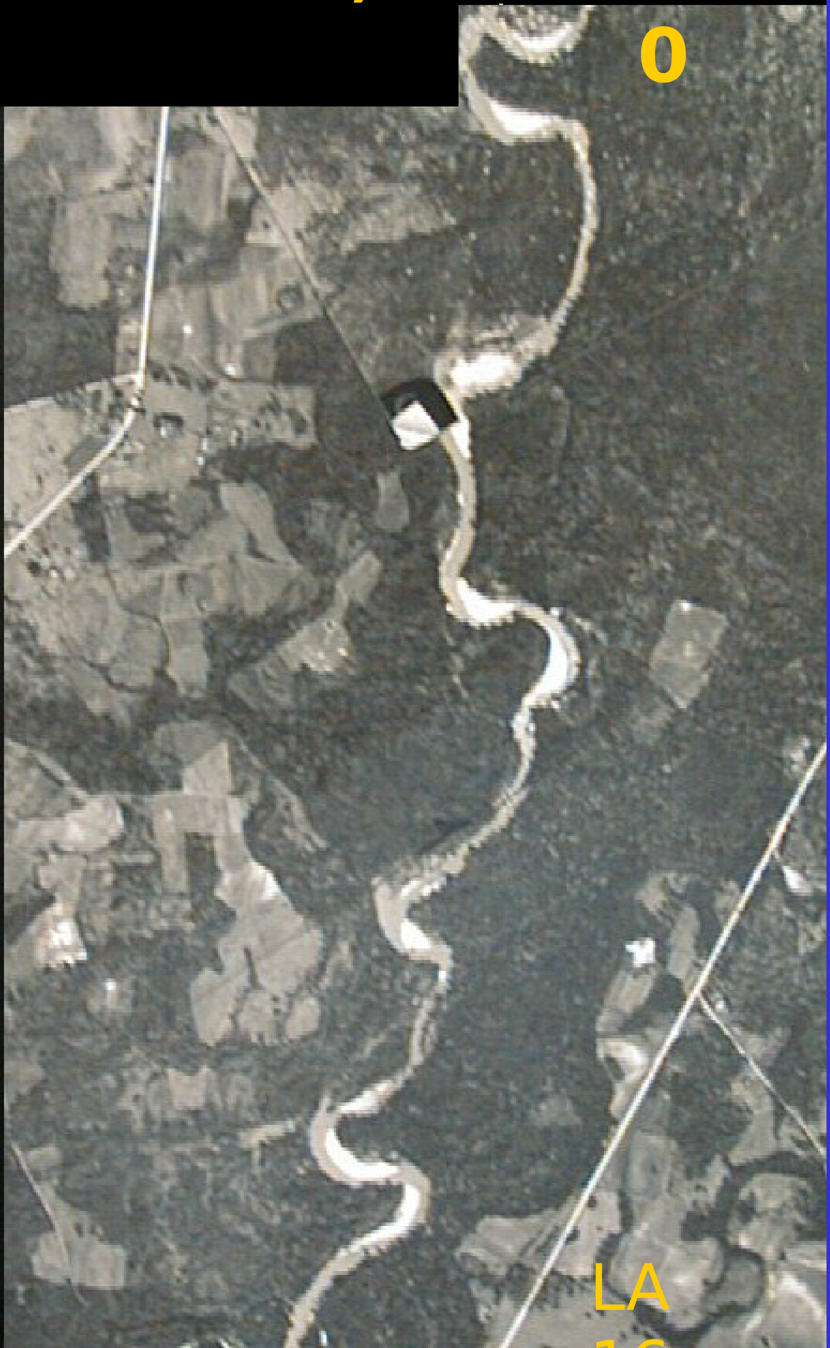

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